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**SIGNAL SUPPORT
AT THE OPERATIONAL LEVEL**

BY

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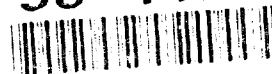
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SIGNAL SUPPORT AT THE OPERATIONAL LEVEL

AN INDIVIDUAL STUDY PROJECT

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In recent years there have been significant changes in signal support framework. Factors include the end of the Cold War, revision of the national strategy, resource constraints, environmental factors, and service mission changes due to the Goldwater-Nichols act. The thesis of this paper is that this paradigm shift specifically affects the way signal support is provided at the operational level of war.

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Signal Support at the Operational Level

Introduction

The U.S. Armed Forces have been undergoing dramatic changes since the demise of the Soviet Union. The Cold War was the major factor shaping U.S. National Security Strategy, the National Military Strategy (NMS) for the past forty years. The U.S. Army structure and doctrine, similarly shaped by the East-West confrontation framework, has also been undergoing changes which in turn have guided the development of army signal support.

The fundamental mission of signal support is to provide a means of effective command and control of army forces. This paper examines U.S. Army signal support concentrating on the operational level of war. The paper specifically attempts to highlight significant factors that affect signal support, survey current signal doctrine, and make suggestions for improving signal support at the operational level.

Thesis

The thesis of this paper is that post-Cold War changes in the military constitute a paradigm shift in U.S. Army signal support operations at the operational level. The implication of a paradigm shift is that existing constructs may not be valid under a new framework. Consequently, within the signal support

structure, there needs to be a new set of assumptions, organizational constructs, and doctrine to meet new requirements. This paper attempts to make a case for realigning signal support at the EAC level to accommodate operational level signal support organizations.

Organization

The paper is divided into three chapters. The first chapter is a primer on signal support and provides the conceptual framework for this study. It outlines how signal support is provided at the three levels of war. The chapter also includes a discussion of trends and environmental factors that affect signal support doctrine at the operational level.

Chapter two surveys the primary recipient of signal support at the operational level, the headquarters element. It rationalizes the need for an intermediate level army operational structure such as an army group or field army. Although this section could be the subject of a separate paper, it is a key assumption of this dissertation. The third chapter proposes a signal support structure to accommodate an operational level headquarters construct. It discusses the factors extrapolated from the first two chapters, and suggests means for providing signal support at the operational level.

Some lessons of Desert Storm/Shield (DS/S) are included in the paper. From a signal perspective, the operation spanned the continuum of signal support. Operation DS/S involved deployments

of contingency forces, building a signal infrastructure to support a large joint and coalition force, transition to war fighting operations, and redeployment of a large force. This was all done in an immature overseas signal theater.

While specifically being cautioned by General Powell, Chairman of the Joint Chiefs of Staff, that operation DS/S should not be held up as a model for future operations and planning,¹ one would be remiss in not gleaning any lessons to be learned. DS/S was the first sizeable military operation in the post-Cold War era; it also was an example of the power projection of a large continental United States (CONUS) based force. From a signal standpoint, it may be a forerunner to similar operations in a more regionally oriented National Military Strategy.

Chapter 1

Signal Support Requirements

This chapter provides a brief overview of signal support from tactical to strategic levels with an emphasis on signal support at the operational level of war. This section also discusses major trends that affect signal support at the operational level of war.

Signal Support Structure

Under the Information Mission Area concept, the Army signal support mission includes five disciplines², communications, automation, records management, visual information, and printing and publications.³ Signal support is usually described on two levels, echelons corps and below (ECB), and echelons above corps (EAC). The ECB refers to signal support in tactical formations from corps to lower level units. EAC signal support includes all signal systems from the corps rear in theater to the CONUS sustaining base signal systems.

Echelons Corps and Below:

Although there are differences in types of units found within the corps (airmobile, airborne, infantry, corps, heavy, etc.), their organic signal support structures are similar. The basic function of a corps or division is the same throughout the army. The function, capability, and structure of the ECB units

and their signal support elements are defined its Tables of Organization and Equipment or Tables of Distribution and Allowances (TOE or TDA), and in the specific unit missions.

Maneuver battalion and brigades are generally equipped with lightweight mobile signal systems such as tactical frequency modulated (FM) radios. At division and corps level, there is a formal signal organization that provides the means of command and control. The signal element deploy an area network, such as the Mobile Subscriber Equipment (MSE), which extends connectivity for command and control systems throughout the formation. Subscribers then access a common-user area system that provides internal connectivity and signal access to lateral and higher level commands.

The primary mission of ECB signal support elements is to establish internal signal means for their parent units. These signal units are only equipped and manned to provide internal command and control for their parent formations. They only possess a limited capability to terminate signal links from higher level organizations. ECB signal units must be externally supported or augmented to get signal access to other theater elements such as higher headquarters, the sustaining base, other services, coalition forces, and other external organizations. This practice follows signal doctrine principle that support is provided from higher to lower level organizations.⁴

Echelons Corps and Above:

EAC signal support includes fixed facilities and tactical signal systems.

Fixed Facilities:

Fixed station systems are permanent or transportable⁵ facilities that provide post, camp, and station signal support. They are normally considered part of the sustaining base environment. Although the sustaining base generally refers to the CONUS industrial and military support infrastructure, it may be extended to a mature overseas theater. This is the case in U.S. Army Europe (USAREUR) and the South Korean theater. Fixed facilities provide the daily signal support to units in garrison, the global strategic connectivity to headquarters, and systems support for the National Command Authority (NCA).

Fixed sustaining base facilities fall under joint control. The Defense Information Systems Agency (DISA) was established to provide a unified single system approach to communications for sustaining base communications. DISA manages national level signal assets; these include satellites and long haul (long distance, international) signal systems. DISA is an operating agency of the Department of Defense and is responsible to plan, engineer, and manage information systems serving the federal government. DISA also exercises operational direction and management control over the Defense Communication System (DCS) which is actually manned and operated by separate service signal operating commands.

The Army's executive agency for DISA is the Information System Command (ISC). ISC, an Army major command, is located at Ft Huachuca, Arizona. The organization provides Army fixed station connectivity for signal, voice, automation, messages, etc. on a global basis through its subcommands.⁶ ISC extends the DCS and provides signal support to units and installations at post, camp, and station levels.

Tactical EAC:

Tactical EAC signal units support EAC formations when they deploy. They are the theater army commander's signal support force that provide the tactical support in the communication zone. This zone is the theater region that extends from the corps rear to the shore. Theater signal systems provide the command and control signal infrastructure that links the theater support elements, joint organizations, other services, coalition, and other forces as required. The theater system is linked to the CONUS sustaining base and the NCA via ISC elements. Theater signal systems are also connected to tactical ECB units such as the corps.

The EAC tactical signal support structure is tailored to the unified commander's requirements. Tactical signal support may be furnished by active duty forces dedicated to a theater, active duty contingency units, or reserve component forces. An example of dedicated forces is the 7th Signal Brigade supporting the U.S. Army Europe (USAREUR) and 7th Army.

The 11th Signal Brigade is an example of an active duty

contingency EAC signal unit. This ISC brigade's mission is to extend the DCS to any part of the globe required. There are other active duty contingency EAC signal battalions such as the Forces Command (FORSCOM), 67th Signal Battalion.

The preponderance of EAC tactical support comes from the reserve components (RC) in the Theater Signal Commands (Army), TSC(A). The TSC(A), commanded by a brigadier general, may control from two to five theater signal brigades. The TSC(A)'s mission is to provide the theater EAC signal support infrastructure. It also extends the DCS, brought into theater by ISC elements. The TSC(A) is part of the regional commanders in chief (CINC's) army component commander's theater army command. The TSC(A) provides the G-6 planning element and signal units supporting the theater. The commander of the TSC(A) is dual hatted as the theater Army commander's signal officer (G-6) and the TSC(A) commander.

Signal Operations

Signal support at ECB tactical levels are standardized. The mission of organic signal units is to provide the command and control means to parent formations. The priority is internal, the signal doctrine is well defined, and the equipment and manning are established by authorization documents.

At echelons above corps signal support is tailored to the CINC's requirements. This tailoring may use contingency forces, such as in the Central Command (CENTCOM), or dedicated signal

organizations such as in USAREUR. Tailoring the signal support structure also includes fixed signal support provided by ISC. Both the tactical and fixed systems are designed to compliment each other.

Fixed station signal support provides the normal day-to-day operations through the Director of Information Management (DOIM). The DOIM works through the ISC under DISA management. This ensures that units in garrison have access to sustaining base connectivity and the DCS. Command of fixed station elements remains with ISC.

The EAC tactical signal units assume the signal support mission as units deploy from garrison. These signal forces are under the command of the CINC and establish the theater signal infrastructure. Elements of this force may be joint or service specific, using either military or commercial signal means, depending on the regional command. These dedicated signal forces may be reinforced by contingency signal units, a supporting CINC, or an activated RC TSC(A). Critical planning considerations include available ISC fixed facilities, U.S. overseas and host nation signal systems, other services signal systems, and allied or combined capabilities. The theater army G-6 integrates these elements under a common signal plan at the operational level in support of the signal portion of the CINC's campaign plan devised by the CINC's J-6.

Operation Just Cause in Panama serves as an example of integrated signal support. The deployed corps signal systems

were augmented by strategic contingency assets. In addition, signal operations used existing ISC fixed "in-country" sustaining base systems for global DCS connectivity.

Operation DS/S is an example of using contingency assets. The ISC contingency signal brigade absorbed the FORSCOM 67th Signal Battalion and became the TSC(A), 6th Signal Command. The unit was formed to support CENTCOM's army component command (ARCENT) headquarters. Its mission was to plan, install, operate and maintain the army EAC signal infrastructure.

Signal Support and the Levels of War

Macgregor credits von Molke as the individual who filled out paradigm for the three levels of war.⁷ The strategic level refers to level of war where broad policy aims are developed, resources are apportioned, and strategic goals are established. The tactical level is where forces engage. The operational level is the intermediate level where the commander determines and sequences his actions to achieve the strategic objectives through the tactical employment of forces.

FM 100-5 acknowledges the difference between the operational and tactical levels of war:

"AirLand Battle doctrine distinguishes the operational level of war - the design and conduct of Major Campaigns - from the tactical level which deals with battles and engagements."⁸

The operational level of war is defined in terms of the command and control process and not specific tactical formations.

However, while the operational level does not translate to a specific combat formation, the corresponding tier for the operational level function is generally above the level of the corps, but lower than the strategic level. Typically, this involves the command and control of multiple corps. This does not negate the possibility that a corps may operate at the operational level. Considering the organizational structure, there is an approximate correlation between signal support levels and the levels of war.

The major distinctions between signal support at EAC and ECB are structure and command responsibility. ECB signal elements are under the command of the force commander (Corps, etc.) and are fixed by TOE in relation to the parent organization. Conversely, the EAC signal support is tailored from building blocks of TOE units that includes fixed station ISC elements, tactical ISC contingency forces, reserve components, and dedicated theater forces.

EAC signal support is dual natured. ISC elements provide army fixed signal support. This ensures the integration of one worldwide signal system under DOD/DISA control. Conversely, tactical EAC signal elements (dedicated forces, ISC contingency tactical, RC assets) that are chopped to the force commander, fall under the theater commander's operational control.

Tactical Level:

The tactical level signal corresponds to ECB signal support maneuver units, divisions, or corps sized units.

Strategic Level:

Strategic level signal support correlates to the EAC sustaining base. These are the national level systems managed by the DISA that provide global access and connection to the NCA. This level includes services such as global secure and non-secure voice networks, satellite systems, message systems, Defense Data Network, the World Wide Military Command and Control System (WWMCCS) and a variety of national level support systems. Strategic level services are provided by ISC in garrison but extended to the theater strategic level through the tactical EAC signal infrastructure.

Operational Level:

Signal support at the operational level is subsumed by the tactical EAC signal support structure. The operational level generally correlates to EAC tactical signal EAC support in a theater. The TSC(A) provides the primary theater command and control structure. The EAC is tailored to the mission using the building blocks of active forces, fixed assets, indigenous signal systems, commercial, joint and other capabilities⁹.

Trends

Over the past years, there have been many aspects of change and trends that affect signal support. These trends impacting operational signal may be arranged into three groups, the evolution of technology, the growing service trends towards jointness, and the changing national military strategy which includes the shrinking of forces.

Technology: Complexity, Specialization, and Centralization

Martin Van Creveld¹⁰ labeled the growth of technology in the military as the "Age of Complexity." Over the past decades, there have been technological advances in all areas, from combat systems to service support. These technological advances introduced more complexity in military systems, management, and decision processes. Van Creveld postulated that the cause, as well as the effect, of this complexity was specialization. Due to increases in complexity, specialization was required. This manifested itself in increased diversity and amounts of specialties required for a process or system.¹¹ Decision makers now had the task of coordinating and collating information from more specialized and diverse elements within an organization. The net effect was to elevate and centralize decision making levels. Thus, centralization grew as a natural consequence of technological advance. He estimated that in the two decades following World War II, the complexity of signal forces (measured by signal MOS diversity) grew by a factor of 4.5

times. The information needed to manage the forces and make decisions, grew some 20 fold.¹²

There was a direct analogy in signal systems design. Marked improvements in signal systems produced greater reliability, permitted longer operating ranges, and increased the capability for extended command and control. Electronic switchboards, digital communications, automation, tactical mobile telephones (MSE), facsimiles, electronic mail, etc., replaced manual systems. This evolution was fanned by more sophisticated users with greater demands, and the growth of the technology. There was a user demand and technology push. New technologies required more diversity and specialization at lower levels. In signal support, this was feasible by the development and adoption of networks for signal systems.

Networks:

Within the past thirty years, the advancement of computer and communications evolved to using automated switches to pass data. This technology was able to satisfy the demand for faster, more secure, and greater amounts of information. This trend became even more focused when digital technology was used in communications. Communications and automation began to merge as computer networks were adopted. The networking structure, however, required diversity and specialization. It also required centralization of network configuration and management functions to ensure commonality and interoperability throughout the system.

Network systems are the predominant design used in the army's tactical area communications systems. Both the Mobile Subscriber System (MSE) and Tri-Service Tactical Area Communications System (TRI-TAC) are sophisticated tactical automatic switches. They require a central network management structure which is usually established at the highest level signal control element.

Adopting networked systems produced a subtle shift in signal operations. Previously, communications system were command oriented. Command elements were the focal point of the signal systems. Under a network system, the network becomes the focus of signal operations, command posts became subscribers in a common-area signal system. Thus, when a tactical signal unit deploys its network in conjunction with a higher echelon signal unit's network, subordinate signal system becomes part of the greater network¹³. Thus, in hierarchical arrangement, the theater network subsumes the responsibility for corps network, and the corps for the divisions, etc. This is necessary to ensure that all parts of the system are properly interconnected. This hierarchical network system parallels the signal command structure from a division signal, through a corps signal brigade, to the TSC(A) network control element.

The net effect was the development of a centrally controlled hierarchical network structures. Current army signal architecture provides a continuous signal theater network which runs from the theater level down to division and brigade levels.

This network uses the primary army tactical area signal systems, the TRI-TAC and MSE. Although each unit deploys and establishes its own network in a decentralized manner, the sub-systems are linked into a fully integrated centrally managed network. Network management is done at the highest level signal command. In a theater this is the TSC(A).

The Changing National Military Strategy:

The U.S. Army FY93 Posture Statement outlines the post-Cold War National Military Strategy (NMS) as having a credible strategic deterrence and defense, maintaining a forward presence, being able to rapidly perform crisis response, and maintaining the ability to reconstitute or generate a large combat force as required.¹⁴ The focus of the NMS strategy changed from the Cold War bi-polar West European to a worldwide regional orientation. When combined with reducing the size of the armed forces and the demise of the Soviet Union, the new NMS transforms a large forward deployed military to a smaller CONUS based power projection force. Future army forces are expected to operate jointly, likely work in national coalitions, and be a power projection force.¹⁵

While these changes affect the size of units at tactical and sustaining base levels, they have a more profound effect on the operational level support structure. Tactical formations, corps and divisions, will still be discrete fighting units and will not be greatly impacted internally. They may be smaller in size due

to cutbacks; however, there is no fundamental change in a unit's basic functions due to the new NMS. Whereas formally forward-deployed, they will now have to deploy from CONUS base locations. Similarly, sustaining base missions remain relatively unchanged. The signal support to the NCA, global or CONUS installations may change in size but not mission.

The greatest effect on signal operations will be in the support structure at the EAC level. This is because the EAC support that provided the framework for the tactical units has to be restructured and reoriented. Some areas more impacted are:

Focus: Reducing forward deployed signal assets affects signal planning at the operational level. The planning framework has to shift to from the narrow Warsaw Pact framework to a global orientation. There will also be less U.S. owned or sponsored host country signal infrastructure available. The planning focus will shift from forces deploying to a mature theater signal infrastructure, to regional contingencies in immature theaters. Time and space relationships will be different from the "normal" linear European battlefield. These factors will be especially critical for reserve component units being activated. They also will not have the advantage of prior knowledge or "someone on the ground."

Integration: Operational level signal planning will need to be more fully integrated into force deployments. The early integration will be critical from the inception of any plan projecting a force. In the past, planners had the luxury of not

being precise about the correct mix of combat to signal support capability because of existing forward deployed signal infrastructures. Operation DS/S offered good insight in this area. One finding in the strategic "lessons learned" was the failure to properly plan and integrate signal elements. The TSC(A) was not established until December 1990, four months after operations started. This ...

".....impacted on ARCENT's initial ability to design, install, maintain, and operate the communications networks and information systems for the Army component commander within theater."¹⁶

While there was an extenuating circumstance for the RC TSC(A) not being deployed, the fact was that the formation of a TSC(A) was late and had an impact on operations.

Joint Systems: Operational level planners will be more involved in joint operations. With fewer army assets and the technological integration signal systems throughout the services, joint operations will be the norm and not the exception. This evolution of joint integrated signal support will also increase as more joint task forces (JTF) are used in the future. In operation DS/S satellite communications provided critical inter-theater links. The satellite systems were a DOD controlled resource being used within the internal army theater signal infrastructure.

Symmetry: Signal support and combat forces will be forced to be more symmetric in composition. With the falling away from the NATO infrastructure and entering into coalition warfare, U.S. signal systems need to be more balanced in order to handle a

greater variety of requirements. In an alliance, long duration force imbalances could be compensated for by its partners. Alliances can be designed asymmetrically to capitalize on the strengths of some partner nations. However, in a regional conflict with coalitions vise more permanent alliances, independence and symmetry of force is a necessity. U.S. forces and signal support have to reflect this shift.

Knowledge Base: A forward deployed signal structure builds expertise in the indigenous signal structure and host nation support. This includes the habitual working relationships with other military and civil authorities, rudimentary language skills which enables communication on the working level, awareness of customs, knowledge of how/where to get things done. With a CONUS based force the loss of the signal interface increases the problems for signal planners at the EAC.

Timeliness: Time frames are different in the post Cold War framework. This theme was amplified by MG Ted Stroop, Department of the Army. He envisions the Army having to respond quickly to regional crisis while having a longer response time for major contingencies, and shorter response time for regional ones¹⁷. The unstated assumption is that a regional conflict would be small and thus the active force would be enough to bridge the gap. This has greater implications for the signal reserve components.

Overseas Infrastructure: The forward deployed overseas signal infrastructure will be curtailed under the new NMS. Under

the old forward-deployed strategy, mature signal infrastructures developed in some overseas theaters. These structures were extensions of the sustaining base at the theater strategic level operated by overseas ISC elements. With this forward deployed infrastructure, the nucleus to expand operations was already in place. This signal infrastructure supported the forward-deployed theater army commander in peace, and served as a "starter unit" from which to expand in case of war. This was a great advantage in operation Just Cause in Panama where the existing signal infrastructure facilitated command and control of the operation.

Coalition Operations: A "significant stand alone subject" from the DS/S lessons learned was that:

"C2 for combined operations were inadequate and often inappropriate for the conduct of coalition warfare in the Third World."¹⁸

The gist of the findings was that training of U.S. Army command and control (C2) doctrine reflected assumptions developed from NATO. These assumptions may not be applicable in other conflicts. Analogous to the C2 interface, signal systems require the interface not only on a personal level for information exchange, but on a technical level to pass the required volume of information (voice, data, imagery, etc) for effective C2. Coalition signal infrastructure will, in most cases, be incompatible with the U.S. Army both from a technological and structural arrangement.

Reserve Components:

The new NMS and reduction of the active forces, will see a greater reliance on the RC for large theater operations. Although there are active signal contingency units such as the ISC contingency signal brigade and two other EAC Battalions, a majority of the operational level signal structure is assigned to the RC. This requires that RC signal elements be more attuned and capable of working in joint and combined environments.

Operation DS/S provided a strong case for ensuring a ready EAC operational level signal capability. In actuality, the RC TSC(A) was not activated because it was not trained on the more modern Digital Group Multiplexing signal equipment.¹⁹ As a result a TSC(A), the 6th Signal Command, had to be formed from army wide assets. The nucleus of this signal command was the 11th Signal Brigade, ISC EAC contingency unit. The original mission of the brigade was not to plan and install a TSC(A) but to extend the DCS worldwide. The TSC(A) was activated some four months into the operation.

In the future, the luxury of a long lead time may not be available. Reserve forces may be pressed into service sooner than estimated with a reduction of the active forces.

Jointness:

JCS Publication 1 stipulates and reinforces the role of joint commands as the fighting element of the future. For the Army, this is reflected in the FY 93 posture statement which

indicates that future Army operations will be "joint, usually combined, and frequently interagency."²⁰

Even before the passage of the Goldwater Nichols act, the idea of jointness was a theme in the signal arena. In 1943 serious consideration was given to combining the signal elements of the Army and Navy,²¹ although this was not adopted in favor of joint level communications control boards.

The management of sustaining base systems is already joint. DISA manages the DCS and provides integrated signal support at sustaining base levels. This follows Van Creveld's model. Technological changes made centralization possible and integration inevitable.

Even though respective services integrated their signal activities internally, an overall Department of Defense (DOD) level integration was never done. Services practiced defacto decentralization. Based upon unique service needs, signal systems were designed and optimized to service requirements and not overall DOD integration. Independently, within each service, there were programs to consolidate information areas such as the Army's Information Mission Area initiatives.²² However, with each service operating independently optimizing for its particular needs, there were inter-service interoperability problems. Similar signal systems were developed in parallel by each service with no DOD wide integration.

Defense Management Report Decision 918:

In November 1992, the DOD took an unprecedented step to

integrate DOD-wide sustaining base signal systems; it adopted the Defense Management Report Decision 918 (DMRD 918). Citing cost savings of some twelve billion dollars and interoperability reasons, the Office of the Secretary of Defense (OSD) consolidated the management of practically all military sustaining base communications and automation services. This measure attempts to solve the fragmentation of the DOD information management systems and interoperability among the services. These problems have been well-documented²³ and sometimes publicized²⁴ focusing public and congressional attention on them.

Under DMRD 918, DISA assumes responsibility for virtually all sustaining base communications and automatic data processing systems down to installation level for all services. This includes gateways, general purpose or business computing, acquisition programs for new information systems, communications above the JTF level, commercial satellite, and long distance systems.

DMRD 918 excludes systems below CINC and JTF levels, command and control, computers and intelligence (C3I); National Guard, war fighting or tactical assets; and war gaming support. The measure specifically exempts C3I systems which are parts of weapons systems assemblages (aircraft, ship, van); systems in direct support of a CINC such as command posts, ships, mobile theater assets (tactical EAC); ECB systems, other tactical systems, and strategic nuclear communications.²⁵

Command, Control, Communications, Computers and Intelligence
for the Warrior Concept (C4IFTW):

Complementing DMRD 918 in the sustaining base, the Command, Control, Communications, Computers and Intelligence for the Warrior Concept (C4IFTW) extends joint signal integration into the tactical and operational levels. This program provides a blueprint to C4I at the "warrior" (war fighting) level. The program was devised to solve interoperability problems that exist between service information systems at the tactical and operational levels.

The vision espoused by the C4IFTW, is for a global C4I network system into which a tactical commander "plugs in" in order to access, pass, or share information. The networks provide data bases, sensor information, secure voice, data communications, video and imagery to users. C4IFTW networks are not restricted to military communications systems but any appropriate means. Both military and commercial systems may be used to provide connectivity.

The program has three phases. After the initial assessment, the first phase is aimed at finding ways for currently fielded systems to interoperate. The second phase establishes standards that ensure interoperability in new procurement. The final phase is the objective phase. It calls for using advanced technology for the global availability of fused information in an environment common to all services.

Discussion:

Both DMRD 918 and C4IFTW were proposed in response to the problem of interoperability. They echo the growing trend towards centralization, seem a natural consequence of technology, and according to Van Creveld, inevitable. The overall result will elevate and centralize the authority and responsibility for configuring information systems to joint levels. While both measures seek the same end, integration of signal systems, DMRD 918 was easily implementable and directly enforceable while C4IFTW is not.

DMRD 918, as the Van Creveld model suggests, is more evolutionary than revolutionary and almost inevitable. Now being implemented, the foundation was unknowingly laid in the past. DISA was an already established organization, complete with engineering and management staffs, and information systems management experience. In addition, there was a well developed infrastructure and operating procedures already in place within the services. DMRD 918 was a realignment of very similar and parallel organizations within the signal communities of the services.

C4IFTW, is a more revolutionary idea and considerably more difficult to implement. The Joint Staff has no global infrastructure for controlling and directing tactical information programs. The Joint Staff also does not exercise direct control over tactical assets; this would run counter to the Unified Command concept. The success of the program "... Depends on the

commitments from the CINCs, Services and Defense Agencies to accept, coordinate, cooperate and comply."²⁶ The JCS does have some leverage in its requirement for the joint level validation of service and CINC information system requirements and its ability to program resources. The success of C4IFTW lies in the ability of the Joint Staff to enforce compliance with its signal standards. With the present "activist" nature of the Joint Staff, control of tactical information systems may not be a problem.

With centralization, however, comes a subtle shift to a new paradigm. More control of information systems in the future will rest at the DOD level. This will affect planning on the operational level. Whereas previously, the Joint Staff and OSD took a more passive role of coordinating the efforts of the individual services, the focus has shifted to a more active role in setting the configuration and management of information systems. This closely parallels the strengthened role of the Chairman, and the Joint Staff with the implementation of the Goldwater Nichols Act.

SUMMARY

The effect of major changes in the NMS, the evolution of technology forcing centralization, and jointness has the greatest effect on the operational level. While evolutionary changes have brought about a revolution in signal means, the basic structure and operation of signal support at the strategic and tactical

level has not changed significantly. The sustaining base is already under joint management and while there have been technological improvements and consolidation (DMRD 918), the basic mission to support the force is unchanged. However, at the operational level, changes involve command and control relationships, restructuring how service is provided to a force, infrastructure changes, integration of forces from different services, and a general reorientation of thinking about providing operational level signal support.

CHAPTER II

The Operational Level Organizations.

The first section provided a background description of signal operations and trends at the operational level. However, the most essential component in designing a signal support structure is the supported organization. This section examines the structure and mission of command and control organizations at the operational level. These are the headquarters (HQ) elements.

The theme expressed in this chapter is that, in the past, army operational level headquarters have been subordinated to tactical level headquarters under the Cold War framework. But under a more regional NMS, operational level headquarters may play a vital role in future operations.

While this topic does not directly address signal support at the EAC level, the substance of the discussion governs the development of signal support doctrine. The topic also sets the stage for recommendations to change signal support at the operational level.

Definition

An operational level headquarters is an intermediate headquarters, between tactical and strategic levels, having operational control over several corps. Typically, this is a field army (FA) or army group (AG) normally found at the EAC.

This level headquarters executes the CINC's strategic campaign plan on an operational level.

The FA/AG is an austere operational level war fighting HQ. Its function is to exercise operational control over its assigned forces. It is a small, mobile headquarters whose essential functions include C2, intelligence, and operations. While it monitors, it does not provide sustainment. Sustainment is provided by the theater commander, separate service, or in the case of allies, a national responsibility.

Today's Operational Level Headquarters

Although recognized in doctrine,²⁷ operational level EAC headquarters (HQ) are not normally maintained in the active force structure as combat formations.²⁸ FM 100-7 The Army in Theater Operations (draft), and FM 100-6 Large Unit Operations (coordinating draft) specify when these organizations are to be formed. The AG and FA are constituted, as needed, when the span of control becomes too great for the theater or joint force commander.

In peace, however, the doctrinal FA/AG structures do not exist. As configured today, army forces are apportioned to the regional commanders in chief (CINCs) as corps without a controlling intermediate operational level army HQ. Without an intermediate HQ, there is a direct working relationship between the CINC at the strategic level, and the corps commanders at the

tactical level. Thus, in operational matters, on a non-deployed basis, the CINC deals directly with separate corps.

In peacetime there is a direct relationship between the CINCs and their assigned corps, the role of the army operational level HQ is then de-emphasized. The de-emphasis was not doctrinally driven; it is more a consequence of the national command structure under the Unified Command Plan (UCP).

A key assumption under the current UCP structure is that an AG and FA could easily be formed if required. While this assumption may have been practical in the past under a Warsaw Pact framework, with the new NMS, it may not be valid for the future. The issue can be framed by examining some underlying assumptions of having army corps fall directly under CINCs without an army intermediate headquarters.

Strategic and Operational Planning:

The first assumption is that the CINC can effectively command and control multiple army corps without an EAC HQ. The CINC is "dual hatted." This may be valid if the CINC retains the role as the land force commander and has the background (Marine, Army).

A potential disparity may exist because the unified command functions at the theater strategic level, while corps generally operate at the tactical level. Without an intermediate army operational HQ, the CINC has to operate at both the strategic and operational levels for army forces. His staff has to develop

campaign plans in detail for separate corps rather than giving ground force missions to a single army EAC HQ. This may be more of a problem if the CINC is from the Air Force or Navy. Split planning functions also may influence the structure of the campaign affecting other services or allied forces. This also requires the CINC to be from a land component service.

The Army Component Commander:

Another assumption is that the CINC's army component command could function as the land force operational headquarters. Although the CINC's army component commander is the highest army level army element in the CINC's command, he or she may not necessarily be an operational level combat commander. The army component commander is responsible for training, administrative, service specific issues, and logistical support of assigned army units. Unless designated by the CINC, the army component commander does not assume operational command of army or ground forces. Theater army forces may be tasked organized under other commands such as a joint task force (JTF), or sub-unified command. This seems the direction of future command arrangements as outlined in JCS Pub 1.

Crisis response:

The third assumption is that, if needed, an EAC HQ can be developed during a crisis. A CINC could request the activation of a reserve component EAC structure or "beef up" an existing

corps enabling it to command and control other corps. There are several issues to consider with this assumption.

Orientation: The nature of the units is different. Corps develop more focused command and control measures, operating procedures, and fixed national, habitual, working relationships. They maneuver divisions down to the tactical level in near real time. An EAC HQ functions in a less rigid framework from a broader operational perspective. Controls are less stringent and its focus is out to 96 hours and beyond. It has to function amid different national, allied, and service variations in procedures. A new "beefed up" corps EAC HQ will not have fully developed the perspective, procedures, and organizational maturity to handle additional corps, service, or allied forces.

Time: It takes time to form an EAC headquarters from an existing corps, active forces, or activated reserve unit. The tempo of an operation may not allow sufficient time to form an effective unit.

Turmoil: Major organizational changes made during a crisis may introduce unnecessary turmoil at a critical time. In "beefing up" a corps to form an EAC HQ, the nucleus of the unit will be destroyed with staff and procedure changes. The result will be a new and untrained EAC HQ, one fewer corps headquarters, and other units having to adjust to new divisions.

Discussion:

Perhaps one reason for the paucity of EAC doctrine, and de-emphasis on the operational level headquarters may be a legacy of the Cold War orientation. In NATO, the U.S. was part of an alliance that provided a comprehensive EAC structure. There was no need to study, consider, or duplicate the structure on a national basis.

In retrospect, NATO military operations were focused at the strategic and operational levels. The boundary was at the corps where operations became national; this was the tactical level. Thus, individual nations focused on operations from the corps and below. There is no comparable army doctrine or structure that rivaled the structure of NATO Central Region Northern or Central Army Groups (NORTHAG and CENTAG).

The Requirement

The Cold War framework de-emphasized the need for an intermediate level army headquarters. However, the issue now becomes whether the FA/AG will be required in the future. Considering the change in the NMS and the shrinking military, the idea of army groups as seen in NATO, or World War II, seems absurd. There are, however, certain trends that make the prospect of this type of headquarters worth considering.

Ironically, the need to consider intermediate operational level headquarters may also come as a result of the changing NMS and reducing the size of the military. As the force shrinks

there will be a commensurate restructuring of the regional CINCs areas of responsibility and forces. Although not settled, the Base Force Concept²⁹ gives a reasonable glimpse into the future. Some possible outcomes will likely be:

Realignment of CINC's Areas of Responsibility:

Although the structure of the unified and specified commands is undergoing change, a probable outcome may be the realignment of regional CINC's areas of responsibility. In addition the NMS calls for the lessening of forward based forces. This weakens the working relationship between army regional CINCs and their assigned corps. Future corps assigned to CINCS will likely be under a JTF for a specific short duration mission.

Pooling of Forces:

The pooling concept calls for task organizing JTF's from a common pool to support CINCs as needed. Operations Just Cause, Urgent Fury, and Provide Comfort are examples of this. The JTF is, in effect, an operational level headquarters. The JTF will, most likely, be furnished to the CINC with its own operational level command and control element. The CINC works on the campaign plan and strategic objectives, while the JTF executes the plan at the operational level. This arrangement further distances a CINC from a working relationship assigned units.

Changing Role of the CINC:

The regional CINC's role is being expanded from its war fighting focus to meet present world requirements. This may range from humanitarian assistance, disaster relief, military assistance, arms control, and a myriad of other functions. Campaign planning will involve political, economic, inter-agency, as well as military resources. The mold of the pure war-fighting CINC is being broken as the bi-polar, East-West, framework shifts from confrontation to regional development. This drives the relationship between the CINC and his staff from a combat force orientation, to a user of pre-packaged forces for specific missions. These pre-packaged forces may not be the traditional corps being chopped to the CINC. They may include composite multi-service teams.

This does not negate the role and responsibility of the regional CINC in war fighting. It, however, further moves the CINC from war-fighting on the operational level toward an expanded strategic level planner.

Discussion:

The trends outlined above essentially change the relationship that existed between the army CINCs and their assigned corps. In the bi-polar framework the army CINC had assigned corps with whom he had a direct relationship. There was a larger force and a war-fighting focus. The army CINC could operate at the strategic/operational level while the corps worked

at the low operational/tactical level. There was no need for an intermediate operational HQ.

With the trends ushered in under a more regional NMS and smaller force, the CINC's role becomes broader focusing on the strategic level. This presents a problem. As the CINC moves more into strategic campaign planning, there is no comparable active army organization to fill the role of an operational level HQ. The void will be filled by the "joint task force." This nitch, however, could be filled by a ground force operational level command such as a refashioned FA/AG. There are several advantages to this.

Operational Parity: One advantage of a standing joint intermediate level army headquarters elevates the Army on a par with the other services beneath the CINC level. This may be more of a factor as the forces that support the regional CINCs are pooled in CONUS. There is no active duty army equivalent operational HQ to serve as a JTF.

Flexibility: This arrangement provides more flexibility to the CINC. The modified FA can easily be made into a JTF, or sub-unified command under the CINC. This would easily fit into the evolving role of the JTF as an operational element.

This flexibility could be critical to commanding other service and coalition forces. Even if the U.S. does not supply the forces, the U.S. may be in a better position to provide the overall command structure to coalition forces or even a United Nations command. This is analogous to the role that the NATO

operational and strategic infrastructure played for the forces of sixteen nations. The modified AG or FA lends itself to forming and fighting in coalitions. Nations in a coalition will, most likely, provide land forces in corps-sized units.

Planning Headquarters: Forming an EAC HQ in response to a crisis erroneously assumes that a standing EAC lacks intrinsic value at the inception of a crisis. A viable deployable EAC HQ offers experience, already developed procedures, a HQ to assist the CINC in his planning. It also provides more options for action early in a crisis.

Large Deployments: This was the original reason for creating the FA/AG. If the size of the force demands such, a FA/AG will be formed as outlined in FM 100-6.

Despite the status of doctrine, the operational level headquarters will be developed if the need arises. Operation DS/S provides a testament to this phenomenon. The operation could be considered a test case for a large U.S. force being deployed overseas. The combined, joint operation required several corps.

The CENTCOM army component, ARCENT/3D Army, was in effect evolving into an operational level command. It had to be "beefed up" from available active and reserve forces to become an operational EAC HQ. ARCENT was also given operational command over the French 6th Division, and British ground forces. Although the CINC retained the role of the land force commander, ARCENT was a viable operational level headquarters with attached allied

forces. CINCENTCOM was able to retain his roles as both the strategic and operational commander because both roles were in sync. This would have been vastly different had the CINC been from the Air Force, Navy, or did not choose to retain operational level control as a command prerogative.

Discussion

If one is to accept the operational level of war as a viable construct with definable attributes, then an operational level headquarters seems a natural extension to the concept.

Sutton³⁰ summarizing Van Creveld writings on Napoleon cites one reason for Napoleon's campaign success was his ability to organize his forces into "independent self sufficient corps." Napoleon was effectively able to organize at the operational level.

Operational level headquarters were developed in World War II, most visibly in the European theater. The operational level HQ existed for the past 40 years under a NATO framework; in operation DS/S it partially evolved with the 3D Army/ARCENT. Macgregor sees the future role of the operational level commander expanding due to technology. He envisions a widening of the sphere because some of the tools and activities taken by the operational level commander effect the strategic and tactical roles.³¹

Whether inscribed in doctrine or as a matter of practicality, if a large enough U.S. or coalition land force

deployed is assembled, a ground force operational level headquarters will be formed. This may be hastened by the reallocation of roles and missions as the NMS evolves and force levels shrink. The paradigm has shifted. One of the lessons of Desert Storm should be to capture the structural and organizational constructs that were created in the desert that were not foreseen during peace. The evolution of ARCENT as an operational level headquarters validated the viability of the operational level HQ.

It could be argued that the need to form ARCENT as an operational headquarters validated current doctrine which was to develop the FA or AG as needed. A HQ became necessary and was formed with the inclusion of VII Corps. This logic, however, is flawed because it did not consider the value of a fully functioning operational level headquarters at the inception of the conflict. The CINC may have had more options. The next conflict may not permit the time available in DS/S for building a AG/FA and the shrinking force structure provide the depth of resources to build a FA/AG.

Summary

The thesis of this section is that an army operational level headquarters may be a viable construct in the future given the changing military structure. The FA or AG has to be configured differently from its predecessors. It has to be more joint and combined capable and will be, in effect, a land component JTF HQ.

CHAPTER THREE

Signal Support at the Operational level

"In the environment to which I was sent, you had General Yeosock, the Third Army Commander, or the ARCENT (the Army Central Command) Commander. He was clearly operating at the operational level of war as far as a document is concerned, there is not much doctrine in the signal support area at the operational level of war. Most of the doctrine is corps and below."

COL Charles G. Suttan
ARCENT G-6, Operation Desert Storm

The thesis of this paper is that trends in the NMS and other environmental factors are forcing changes in operational level signal support. These changes are so pervasive as to suggest that future signal support may be better met under a different signal framework which is adapted to the changes. This chapter discusses the trends and factors outlined in the first two chapters as they affect signal support at the operational level. It also includes a recommendation for restructuring EAC signal support to provide better C2 means at the operational level.

DISCUSSION

Operation DS/S proved that the current signal support structure and doctrine can meet the Army's needs as defined two years ago. However, the operation was conducted with a larger active force than today, and the coalition had months to prepare for the offensive phase. With reductions in the military forces, the rapidity expected in regional conflicts, and under a new NMS,

the conditions which existed in operation DS/S may not be the same for future conflicts.

Signal support doctrine, however, should prepare for the next war and not assume past constructs are still applicable. The need to re-examine signal doctrine at the EAC level is reflected in the following themes.

Emergence of the Operational Level HQ:

Despite the state of doctrine, if a large U.S. force deploys, an operational level command and control organization is likely to emerge. This possibility will not diminish in the future. On the contrary, the need for an operational level headquarters may increase under a regionally oriented NMS and shrinking military force. Additional factors affecting this phenomenon are the trend towards centralization due to technology, joint and combined initiatives, and the changing role of the CINCs. The increased use of JTFs, force-pooling, and coalition warfare may intensify the need for an operational level land force headquarters to command U.S. and coalition forces beneath the CINC level. The critical difference is that a future operational AG/FA will likely operate joint or combined.

Signal Planning Void:

There is an operational signal planning void in the active force. Strategic signal campaign planning is done by the regional CINC. The J-6 plans for all services and not

specifically for the army component. With no intermediate operational level headquarters, the next lower army signal planning level is the corps. Corps plan for the tactical employment of their divisions; their planning focus is internal. The corps signal structure is not designed, equipped, or manned to plan and support a theater infrastructure or a force larger than itself.

The missing element is an active duty TSC(A) equivalent. Under a forward-deployed structure, the regional CINCs have an active duty organization to plan and execute theater signal operations. The signal organization falls under the army component commander. USAREUR's 7th Signal Brigade is an example of this arrangement.

There is no equivalent active duty TSC(A) in CONUS. Although the active duty ISC contingency brigade (11th SIG BDE) has been used to plan and support EAC operations, the unit is not a theater signal planning organization. Its mission is to extend the DCS globally. In reality, the brigade's command structure runs through a RC TSC(A). The 11th SIG BDE falls under the TSC(A) when the TSC(A) is activated.

In a shrinking CONUS based army, this capability will not likely be included in the force structure. If the Army adopts a force pooling concept and assembles JTFs for regional CINC missions, it needs to identify an army signal operational planning element. The CONUS TSC(A)s, responsible for this type of planning are in the RC.

RC organizations have a viable capability, but they require a presidential callup and may not be available for crisis response. Having to activate RC forces may present problems in availability, timeliness, and input to the crisis planning process. This does not include any training, if required, during the mobilization process.

Operation DS/S serves as an example. The 6th Signal Command was formed from the ISC contingency brigade. Even if the RC TSC(A) was modernized and activated, would it have been ready in sufficient time to assist in signal planning at the inception of the operation?

The EAC Operational and Strategic Level Schism:

The current army EAC signal paradigm does not specifically recognize an operational level of war. The EAC signal infrastructure is a mixture of the theater strategic and operational level organizational support. The essence of EAC signal doctrine is to tailor a signal organization to match the combat mission.

Operational perspectives and orientations at the strategic and operational level of war are different. This is also reflected in signal support. The theater strategic level focuses on administrative and logistics support; its requirements are for volume traffic, logistics, sustainment of larger installations, port facilities, and more of the static sustaining base type operations. The operational level focuses on war-fighting. The

operational level commander will be more apt to demand mobility, agility, speed, intelligence networks, and more timely command and control. The operational level commander will also most likely operate in the corps rear area.

These two orientations produce a schism in the EAC signal theater network. The TSC(A) provides a unified centrally managed signal infrastructure under the theater army commander. The divergent operational and support orientations may be difficult to reconcile if the requirements of the operational force commander are vastly different from the army theater support commander. This problem comes into focus if the army component commander is not the operational force commander. The army component commander will be the senior army representative in the theater. However, the operational commander may be from another nation (NATO), another ground service (Marine), JTF commander, or an army operational level command (FA or AG).

An example of such a schism was witnessed in the case of CENTAG's 97th Signal Battalion (97 SIG BN). CENTAG HQ exercised wartime operational command of the V and VII (US) Corps. USAREUR provided the corps with administrative and logistical support as part of the national responsibility. USAREUR's TSC(A) was the 7th Signal Brigade (7th SIG BDE). CENTAG's signal support was provided by the 97th (US) SIG BN and German sister battalion.

Although the 97th SIG BN and 7th SIG BDE signal systems were integrated into one theater network, signal planning was sometimes problematic because of mission orientations. The

theater network managers, 7th SIG BDE, had the preponderance of signal capability. They naturally designed the theater signal systems to meet their missions. The 97th SIG BN was not equipped to manage a theater network, and were integrated into the system as a sub-network.

The U.S. theater network operations were sometimes out of sync with CENTAG requirements due to mission differences, national priorities, and organizational perspectives. In practice, there was cooperation because the war-time NATO commander (COMCENTAG) was the U.S. force commander (CINCUSAREUR) in peace. However, the U.S. national support mission was different from the NATO operational mission. This schism affected the EAC theater signal network. The doctrinal theater signal concept envisioned centralized theater network management. This was not possible because of the operational differences between USAREUR and CENTAG. The result was a semi-autonomous NATO sub-network within the greater U.S. theater network. CENTAG had to maintain its mobility and operational war-fighting focus. This was sometimes translated to the corps networks which had to respond to CENTAG and USAREUR for different requirements.

During operation DS/S a similar split emerged at the EAC in support of ARCENT headquarters. In an interview conducted with LTC Horton, S-3 of the 11th Signal Brigade during DS/S, he confirmed that the theater signal network took on such a split nature. The 86th SIG BN was used as the nucleus and task organized battalion to solely support ARCENT headquarters as it

replicated itself three times (MAIN, FORWARD, and TAC - task Force Freedom). This effort was much different from the demands of the 22d Support Command. These were filled by the 40th SIG BN which was task organized and augmented for the mission. The theater network reflected two distinct characteristics - one theater logistical and the other operational.

In operation DS/S the problem was resolved by unity of command. ARCENT commanded the 6th Signal Command and allocated limited resources to competing requirements between operational war-fighting level and administrative/logistical theater needs. In the case of the 97th SIG BN and NATO, this was never fully reconciled. The actual operations in USAREUR were never tested because there was no actual war in Europe under the NATO framework.

The same potential for a disconnect will exist if the operational and support force commanders are different and the individuals are not in sync, or when there are vastly divergent operational and support requirements. This is more likely to occur when sub-unified commands and JTF's are used in a theater. The signal support disconnect comes from not recognizing, that EAC structure actually supports two separate levels of war, the theater strategic and the operational. Each level has its own distinct signal requirements. In the past, it was possible to satisfy both under the signal EAC structure, this may not be possible in future.

Conclusions

Signal support at the operational level is a separate construct and should be addressed as such. While never being explicitly defined, it creates a schism in the EAC theater signal operations. There is no distinction in EAC signal doctrine, organizational structure, and equipment design between the theater strategic with operational levels.

This consolidated EAC signal structure was supportable in the past. There was a forward-deployed force structure which provided a theater TSC(A), the NATO infrastructure with its own signal infrastructure, more capacity with a larger Army, and the relatively autonomous signal operations in each separate service.

The new military framework exposes the duality of the EAC signal structure. The realities of a regionally based NMS, smaller force, technical signal advances, and adoption of JTF as the new war-fighting force all contribute to the recognition of a separate operational level signal requirement within the signal EAC framework.

The evolving EAC signal operations require that generic theater EAC signal support construct be re-examined from the perspective of supporting the operational and theater strategic levels of war as separate entities. The signal structure has to change from a homogeneous hierarchical MSE/TRI-TAC system networked structure to one which could accommodate joint or coalition forces and be more functionally oriented.

While it is possible to meet future operations with present structures, it may not be optimal. The advent of a smaller force, quick response time, status of the reserves, jointness, emergence of the operational level suggest that signal support doctrine at the EAC level be revised.

Recommendation

In order to meet the requirements, the EAC signal support structure could be divided into two constructs. The first is the theater signal infrastructure normally associated with the area signal support in the communications zone. This is EAC theater signal support structure as it currently exists with a theater network. The second construct is operational level signal support system. This level of support is command-oriented, and specifically targets the operational level headquarters. A recommendation for this operational level support is outlined in the following ends-ways-means framework.

Ends:

The signal requirement is to provide effective means of command and control for an operational level headquarters such as a FA/AG to command its subordinate units. Essential signal requirements are for autonomous signal capability, mobility, agility, and connectivity to the theater and subordinate unit networks. Operating and subordinate elements may be army, other service, or combined forces.

Ways:

Form an operational level signal support organization in the active army. This organization must include two critical elements, a signal planning staff at the O6 level, and a signal field unit to support the headquarters under the operational control of the planning staff.

The signal staff's function is to plan for the installation, operation, and maintenance of operational level signal systems. It would perform the operational level planning in support of a CINC's campaign plan. The staff could be assigned at the FA/AG level to support the operational level organization. Being an active duty unit, it will be available for planning during crisis response and for regional contingency missions. It could be the nucleus around which a TSC(A) could be built. This planning element would provide the command and control structure for an operational level joint or combined headquarters.

The field organization should be designed to operate in support of a joint or combined operational level headquarters. It should be noted that the recommended structure for the field army and army groups calls for a signal battalion.³² The specific composition of and capability of the unit was not specified.

This field organization could be as small as a signal battalion. The unit could be smaller because it is unencumbered by having an area mission and supporting administrative and logistical elements. In contrast to an EAC area-oriented signal

battalion, the unit should be a command-oriented unit. Its primary mission would be to connecting various headquarters and other subordinate headquarters. The emphasis would be on tactical mobility and dedicated support. The headquarters elements to be supported will be a main, alternate, and possibly a tactical headquarters.

The battalion should have the capability to provide its supported units with a more complete suite of signal services than found in normal signal battalion operations. If it has to support other service or coalition HQ, possibly equipped with incompatible equipment, it has to furnish the end instruments. This includes switchboards, message processing equipment, facsimile, automation equipment, telephones, etc. There is no guarantee that the supported units will be able to interface their organic equipment.

The battalion should manage its own internal signal network that should parallel the theater network. Although it augments the theater network, it should not be so fully integrated that it becomes a critical link. The unit needs the flexibility of link into the theater and corps networks. The unit will not be expected to serve as the theater network controller, although it should be equipped to control its own internal network. It could assume the role of the alternate theater network manager.

Means:

Given the reduction of the military, a currently existing signal battalion could be configured for the mission. A good candidate would be one of the existing EAC contingency battalions. The unit would not be significantly changed in size. The mission focus would be changed from an EAC area support mission to an EAC operational headquarters command operations battalion.

SUMMARY

Overall, signal support is not "broken." Operation DS/S was a testament to this. Despite the normal activities in an operation which could be attributed to the "fog of war," the operation was successful. However, while signal support is not "broken", it could be made more efficient and relevant to the changes in the military.

Changes in the NMS and the signal environmental necessitate that future signal support be examined. A separate operational level signal construct has not been specifically addressed in doctrine, equipment design, or organizations structure. This may present a useful framework to refocus signal support at the EAC level.

There is a shortfall in active force signal planning between the strategic level and the tactical level. This has been made evident by direction of the NMS and reduction in the size of the army. It seems less risky and more cost effective to fashion a

signal support structure specifically for the signal support at the operational level. This capability would be advantageous in the pooling-concept and assembling JTF force packages from CONUS to support the regional CINCs.

The current mismatch of capabilities at the operational level may be described as a paradigm change. The present structure is a vestige of the cold war. The new environment requires reexamine our old paradigm. It may not be relevant for future signal support.

ENDNOTES

1. Joint Staff, National Military Strategy, (Washington: The Joint Staff, Jan 92), 28.
2. U.S. Department of the Army, Signal Support of the Air Land Battle, Army Regulation 24-1, (Washington: U.S. Department of the Army, Jun 90).
3. Restated in functional terms, the essential elements are audio (radio, telephone), data (computer services and connectivity), hard copy (messages, facsimile), visual information (imagery, combat camera, photography), and battlefield information services (distribution, printing and publication, forms management, freedom of information, etc.).
4. U.S. Department of the Army, Signal Support of the Air Land Battle, Army Regulation 24-1 (Washington DC: U.S. Department of the Army, Jun 90).
5. A transportable facility may not be a mobile facility. Mobility is a requirement for tactical maneuver, while transportability is a requirement for being able to move a facility.
6. These commands provide world wide strategic sustaining base connectivity. The CONUS ISC command is the 7th Signal Command. The ISC command in Korea is the 1st Signal Brigade, and the ISC European command is the 5th Signal Command.
7. Douglas A. MacGregor, Future Battle: The Merging Levels of War" Parameters (VOL XXII 4 - Winter 92-92), 44.
8. U.S. Department of the Army Operations, Field Manual 100-5 (Washington: US Department of the Army May 1986), 27.
9. U.S. Department of the Army, Signal Support EAC, Field Manual FM 11-23 (Washington DC: U.S. Department of the Army, Coordinating Draft, Jan 92).
10. Martin Von Creveld, Command in War, (Cambridge, MA: Harvard University Press), 234.
11. Ibid., 234.
12. Ibid., 235.
13. Should one unit, such as a division, deploy by itself, it has the ability to run the network by itself. However, should a corps controlling the division deploy, the

division passes control of the overall network to the corps systems control.

14. Michael P. W. Stone and Gordon R. Sullivan. Trained and Ready, America's Army: Not a Cold War Army: The United States Army Posture Statement FY 93, Posture Statement presented to the 102d Cong., 2d session. (Washington: U.S. Department of the Army, 1992), 23.

15. Ibid., 37.

16. Department of the Army, Operations Desert Storm Lessons Learned, Volume II (C), Strategic (U), (Washington DC: U.S. Department of the Army, Draft Report, n.d.), finding PII-4-2.

17. MG Ted Stroop - Briefing to the Army War College AWSC, Strategic Force ... Decisive Victory, 29 Oct 93.

18. Department of the Army, Operations Desert Storm Lessons Learned Volume I (C) Significant Stand Alone Subjects (U), (Washington: U.S. Department of the Army, Draft Report, n.d.) Finding I-4-1.

19. Ibid., Finding II-4-6. ARCENT made a decision not activate the CAPSTONE unit because it had not transitioned to more modern DGM.

20. Michael P.W. Stone and Gordon R. Sullivan. Trained and Ready - America's Army: Not a Smaller Cold War Army, Posture Statement FY 93, presented to the 102d Cong., 2d sess. (Washington: U.S. Department of the Army, 1992) 37.

21. George R. Thompson et. al., Signal Corps: The Test (Dec 41 - Jul 43), (Washington: U.S. Government Printing Office, 1957) 550-553.

22. U.S. Army War College. Army Command, Leadership, and Management: Theory and Practice, 1992-1993. (Carlisle, PA, 1992), Chapter 22.

23. There have been several reports discussing the failure of to fully integrate information resources. Two examples are:

a. United States General Accounting Office Report. Meeting the Government's Technology Challenge, Information Management Technology Division, (Washington DC, Feb 1990).

b. United States General Accounting Office Report. Information Resources: Army Should Limit New Initiatives Until Management Program is Implemented, Report to the Office Report

to the Chairman, Subcommittee on Defense Appropriations, House of Representatives, (Washington DC, Jun 1990).

24. An example was the news report during the invasion of Grenada, in which a soldier used his credit card in a telephone booth call to Ft Bragg in order to be connected to a ship off shore.

25. C4I - Command, Control, Communications, Computers, and Intelligence.

26. The Joint Staff, C4I for the Warrior. (Washington: Joint Staff, 12 Jun 92). This was quoted from BG Douglas Buchholtz, Deputy Director for Unified and Specified Command C3I Support (J62), Joint Staff.

27. Department of the Army, The Army in Theater Operations, Field Manual 100-7 (Draft), 30 Aug 91, and Large Unit Operations, FM 100-6 (Coordinating Draft), 30 Sep 87.

28. There are organizations such as the 8th Army or Third Army, however, they are not "generic" fully formed field Armies. The Third Army is not manned fully and is made up of reserve and active forces. The 8th Army is a result of international and bi-lateral treaties with South Korea.

29. The White House, The National Security Strategy (Washington DC, 1991). The Base force concept suggests four basic force packages: Strategic, Atlantic, Pacific, and Contingency forces.

30. LTC Charles G. Suttan, Jr., Command and Control at the Operational Level. Army War College Military Studies Program Paper 1986.

31. Douglas A. Macgregor, "Future Battles: The Merging Levels of War", Parameters (Vol XXII 4 (Winter 92-93), 44.

32. Department of the Army. The Army in Theater Operations (Draft), Field Manual 100-7, (Washington DC: U.S. Department of the Army, 31 Aug 90).

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